identified in reciprocal form as RTC. The other is the number of subscribers, for which we have used the number of subscribers in the system. It is identified in reciprocal form as RSS.

There are 5 product mix variables in our model. One is the proportion of channels that are cable-only (i.e., non-broadcast), identified as PNB.[40] The cable company usually has to pay a fee to the channel originator on a per-subscriber basis for these channels. Therefore, higher values of PNB should be associated with higher costs. Also, lower values of PNB may reflect a greater degree of competition with over-the-air broadcasting. The others are variables which relate to equipment or services for which subscribers are usually charged extra beyond the charge for basic service.[41] As noted above, the revenues from these services are included in our dependent variable.[42] Each of them is measured as the proportion of subscribers in the franchise that get these extra services, or, in the cases where subscribers may get more than 1, the ratio of the number of these services provided to the number of subscribers. These variables include the ratio of the number of additional outlets to the number of subscribers, identified as PAO; the proportion of subscribers to the second tier of channels beyond the basic tier, identified as PT2;[43] the ratio of the number of tier subscription changes to the number of subscribers identified as PTC; and the ratio of the number of remotes rented to the number of subscribers, identified as PRM.

The remaining variable in the model reflects other costs. It is the median income in the franchise area as determined from

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[40] Commenters asserted that using the number of satellite channels as an explanatory variable in our original benchmark discriminated unfairly against cable-only channels that are delivered by non-satellite technologies. Comments of Affiliated Regional Communications, Inc.

[41] NERA (June 16, 1993, p.7) argues that equipment quantities are important to consider.

[42] Besen and Woodbury (June 17, 1993, pp. 17-18) criticized the Commission's previous model for including these extra charges in our dependent variable but not accounting for them properly. Their suggestion to use a fixed-weight price index is inappropriate because of the cross-subsidy problem noted above and because, for many cable systems, the quantities of these extras are zero and the prices are nonexistent.

[43] Ernst & Young (pp. 6-8) argues that second-tier channels are likely to have higher programming costs than basic tier channels. In our model PNB should also reflect programming cost differentials.

the 1990 Census.[44] This variable, identified in log form as LIN, is included to reflect differences in wage rates[45] of employees, and possibly other costs that might be correlated with wage rates.

Regression Results

Table A-1 shows the results of our regression estimates. The top part of the table shows the estimated coefficients and their standard errors. As noted above, the coefficients of the logarithmic variables can be interpreted directly as percentage impact estimates. However, the impacts of the proportion and dummy variables must be computed from the coefficients. The bottom part of the table shows those computed estimates of the

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[44] This is one of several population characteristics for each service area that were used to check for the effects of differences in the demand for cable service. Differences in demand elasticity might be expected to affect the amount by which noncompetitive systems are able to mark up their prices, and thus might affect the size of the competitive differential. To measure such effects, we used population characteristics that had been found to be significant determinants of demand for cable or telephone service in previous studies. These included percent of population below the poverty line, percent of population urban, percent of population non-English-speaking, percent of households containing a single person, percent of homes that are owner-occupied, percent of households with children under the age of eighteen, percent of population of white race, and median household income. Data were obtained from the 1990 Census for Zip Code areas corresponding to cable franchise areas in the data base. Desired variables were constructed from Census categories and merged with the survey data.

In a few cases survey and Census records could not be matched by Zip Code. In cases where the Zip Code had changed since the 1990 Census, community names were found that matched the current Zip Code. In cases where no data existed for a Zip Code, for instance where it represented an office building, maps, street addresses, and a Zip Code directory were used to find Zip Codes of adjacent areas.

[45]One might argue that the inclusion of the income variable could reflect demand effects rather than cost effects. However, as shown below, our estimate that shows the possible effect of simultaneous equations bias due to the interaction of supply and demand results in a coefficient of the income variable that is only slightly different from the ordinary least squares estimate, indicating that our estimated coefficient primarily reflects costs rather than demand.

impacts of changing the values of the variables from 0 to 1.[46]

As indicated above, the low penetration variable A1 has a coefficient that is not significantly different from zero, indicating that these franchises charge rates which are on average little different from the noncompetitive franchises. Its coefficient of -.010 implies that their rates are only about 1 percent lower on average than comparable noncompetitive franchises. OVL has a coefficient of -.174, which implies that the franchises facing competition throughout their service area have rates that are about 16 percent lower than comparable noncompetitive franchises.[47] The municipal variable C has a coefficient of about -.231, which implies that the municipal sample has rates that are about 21 percent lower than comparable other competitive franchises and about 37 percent lower than comparable noncompetitive franchises.

The regression estimate indicates that MSO franchises charge rates that are about 7 percent higher than non-MSO franchises, and that the franchises of MSOs with larger numbers of systems charge slightly higher rates than MSOs with fewer systems. A 100 percent increase in the number of systems in an MSO is associated with a 1 percent increase in rates.

Other things being equal, franchises of large systems have lower rates than those of small systems. This probably reflects the spreading of fixed costs over more subscribers. Because of the nonlinear nature of the RSS variable, its impact is not as clear as the other variables. However, the primary impact of system size is for very small systems. The coefficient implies that a system with 810 subscribers charges an average rate that is only about 1 percent higher than that of the largest system. But that same system of 810 subscribers would have an average rate that is 36 percent lower than the smallest system in our sample, which has only 18 subscribers.

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[46]Because the reciprocals never take on the values of either 0 or 1, the computation of corresponding impact estimates for those variables is inappropriate. The equation in footnote 6 above should be used to determine the impacts of changes in those variables, where *f* and *g* are the reciprocals.

[47] A dummy variable B for the original overbuild sample used in place of OVL has a coefficient of -.140, implying rates about 13 percent lower than those of comparable noncompetitive franchises. In this specification the municipal variable C has a coefficient of -.340, implying municipal rates about 29 percent lower than noncompetitive rates. The comparison group is noncompetitive systems in this case because there is no overlap between B and C.

Other things being equal, rates increase as the number of channels increase, but the relationship is nonlinear. The coefficient of RTC implies that an increase in the number of channels from 7 (the smallest in our sample) to 14 is associated with an 11 percent increase in rates, while an increase in the number of channels from 35 to 70 (the largest in our sample) is associated with a 2 percent increase in rates.

The coefficient of PNB indicates that a franchise with no broadcast channels would have rates that are 29 percent higher than a franchise with all broadcast channels. A smaller and more realistic change of 10 percentage points (e.g., from 60 to 70 percent) is associated with rates that are less than 3 percent higher.

Higher average rates are also associated with optional equipment and features. This is to be expected, because the charges for these options are included in these average rates (which are really average revenues per subscriber from regulated services). Franchises where there is an average of 1 additional outlet rented per subscriber have average rates that are 11 percent higher than those where no one rents additional outlets. Franchises where there is an average of 1 remote rented per subscriber have average rates that are about 19 percent higher than ones than those where no one rents remotes. Franchises where every subscriber subscribes to Tier 2 have average rates that are 6 percent higher than those where no one subscribes to Tier 2. Franchises where there is an average of 1 tier change per 10 subscribers have rates that are less than 4 percent higher than those where no one changes tiers.[48]

Higher labor costs, as estimated by the income variable are also associated with higher rates, with a 100 percent increase in labor cost being associated with rates that are about 7 percent higher.

Other Variables Tried and Eliminated

There were many other variables tested for inclusion in the model, either because we felt they might influence rates or because commenters argued that they should be included. In most cases they were eliminated because their coefficients were not statistically significantly different from zero at the 95 percent confidence level. However, as noted below, in a few cases the variables were excluded because of other problems. In most

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[48] The coefficient indicates that franchises where there is an average of 1 tier change per subscriber have rates that are 42 percent higher than those where no one changes tiers. However, in practice there are no franchises in the sample with a value of 1 for PTC. The average value is only .01.

cases, the inclusion of these additional variables has little impact on the estimated coefficient of OVL.[49] The few exceptions to this included values that were both lower and higher for that coefficient. Therefore, we believe that our estimate of the competitive differential is reasonably robust to alternate choices of variable inclusion.

In our regressions we considered several variables that measured the length of time (in years) during which competition had been in place, as measured by the age of the newest headend among the competitive systems operating in a franchise area. Our expectation was that the competitive differential would diminish over time, because price wars are more common in the early stages of competition and collusion and non-price competition are more common in later stages of competition.[50] Our best estimate involving this type of variable confirmed this, showing a competitive differential for the overbuilds that started at 24 percent for brand-new competition, then diminished to 17 percent after five years and to zero after fifteen years. The problem with this variable is that the oldest competitive systems were 26 years old, at which point the coefficient implies that overbuilds have rates that are 21 percent higher than non-competitive systems, which is implausible. Consequently, we rejected specific use of this variable in our final model because it leads to implausible estimates. We tried several other functional forms, however, which generally yielded the conclusion that the prices rise with the duration of competition. We did not pick any one variable or functional form as the right one.

We tried an interaction between OVL and MSO. This variable did not have a significant coefficient. This would indicate that the competitive differential is approximately the same for MSOs and non-MSOs.

We tried including separate dummy variables for the municipally owned systems and the privately owned franchises competing against the municipally owned systems. The coefficient for the privately owned franchises was more negative than that of the municipally owned systems, indicating that the private firms were charging rates that were lower than the model would predict for comparable municipally owned systems. However, the difference between the 2 coefficients was not statistically significant. Therefore, we decided to include just 1 variable, C, for the municipal sample.

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[49] I.e., the coefficient changes by less than .01.

[50] Shew (pp. 12-15) argues that systems that have been competing for 5 years or less are more likely to engage in price wars and thus charge lower prices.

We tried various other functional forms for the subscriber variable.[51] These included a linear version, a logarithmic version, and the reciprocal of the logarithm. The reciprocal of the number of subscribers gave the best fit. This form of the variable is compatible with the concept of fixed costs being spread over the number of subscribers. As an alternative to the use of system subscribers, we tried using franchise subscribers, again using various functional forms. This resulted in a slightly worse fit for the regression. When both system and franchise subscribers were included in the equation, only system subscribers had a significant coefficient. We also tried a subscriber variable analogous to OVL, which was equal to system subscribers if the same rates were charged to all franchises in a system, and franchise subscribers otherwise. This also yielded a worse fit than system subscribers. Therefore, we selected RSS as the best measure of the number of subscribers.

As an alternative to RTC as the channel variable, we also tried the log of average total channels.[52] This resulted in a worse fit. As alternatives to PNB, we also tried using the proportion of various other channel groupings, including satellite only, satellite and other,[53] and non-local broadcast. These all resulted in worse fits, as did including the groupings of channels as totals instead of proportions. We also tried adding a dummy variable for six or more local broadcast signals.[54] This variable did not have a significant coefficient.

Various other product mix variables were also tried. These included installations per subscriber, disconnects per subscriber, reconnections per subscriber, churn per subscriber (the sum of the above three), tier 3 subscriptions per subscriber, converters rented per subscriber, and addressable converters per subscriber.[55] These generally had insignificant

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[51]Dertouzos and Wildman (pp.7-8) suggested using alternate functional forms to estimate scale economies.

[52]As noted above at note 40, average channels are weighted averages across all tiers of service.

[53]"Other" means cable-only channels that are not satellite channels and not public, educational or government (PEG) access channels. NERA (June 16, 1993, p. 6) argues that PEG channels are important.

[54]Dertouzos and Wildman (p. 12) argue that competition from six or more local broadcast channels tends to hold rates down. See also Comments of Continental Cablevision, Inc., pp. 6-9.

[55]Dertouzos and Wildman (pp. 10-11) argue that addressability is important.

coefficients.

We also tried various other cost variables. These included percentage urban,[56] line miles in the franchise area, line miles in the system, density (for the franchise area and the system),[57] defined either as households passed per line mile or as subscribers per mile, percentage of plant below ground,[58] percentage of fiber,[59] and the age of the principal headend.[60] In addition, we tried the amount of revenue per system subscriber from pay TV and advertising.[61] None of these variables had coefficients that were statistically significant. It is not clear which of these cost variables should be reflected in rates if the firms are basing rates on marginal costs.

We also tried various demographic variables derived from the 1990 decennial Census.[62] These included percent of the population below the poverty line, percent urban, percent non-English speaking, percent white, percent of households containing a single person, percent owning their homes, and percent with children under the age of 18. These are all variables that are more likely to affect demand than supply. None of them had statistically significant coefficients.

System Size and the Competitive Differential

Several commenters pointed out that, using our original equation, the competitive differential was large and

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[56] Ernst and Young (pp. 13-14) argue that population density is important. This should be reflected in the percentage urban variable.

[57]NERA (June 16, 1993, p. 6) and Ernst and Young (pp.13-17) argue that density is important.

[58]NERA (June 16, 1993, p. 7) and Shew (p. 16) argue that the percent below ground is important.

[59]Dertouzos and Wildman (p. 11) argue that fiber is important.

[60] Dertouzos and Wildman (p. 11) argue that age is important. Mileage, density, age, and revenue per subscriber variables were tried in both linear and logarithmic form. Density was also tried in reciprocal form.

[61]Dertouzos and Wildman (pp. 10-11) argue that such revenues are important.

[62]Kelley (July 2, 1993, p. 4) argues that demographic variables are important.

statistically significant for small cable systems but statistically insignificant for large cable systems.[63] We were able to replicate these results with our cleaned-up data. We analyzed possible explanations for this finding and explored whether the apparent difference in the competitive differential by system size was either due to faulty measurement or to interactions between competition and other variables affecting revenue per subscriber. We expected that construction of a system overlap measure to improve the measurement of competition for large systems would eliminate the difference in the competitive differential by system size. As noted above, this variable has a larger and more significant coefficient and explains more of the variance than the franchise level overlap variable. But if a dummy variable for small (less than 5000 subscribers) competitive systems is added, the coefficient of the system overlap variable becomes insignificant.

One possible explanation of the difference in the competitive differential with system size is that large systems facing competition are more sophisticated than small ones and have learned to collude more effectively with their rivals. If this explanation is correct, it suggests that the competitive differential for small systems is closer than that for the whole sample to the true effect of competition on price. Nevertheless, any partitioning of the data into size classes will be arbitrary, since we know nothing about the technology or economics of cable systems to suggest a rationale for the choice of size classes. Given the small size of the competitive sample, dividing it still further and attempting to draw inferences from a still smaller sample appears unwarranted. Thus we believe that any estimate used for rate regulation should be based on the entire sample.

We tried interactions between OVL and system size, using various functional forms. In most cases, this interaction was not statistically significant or it resulted in a very high degree of multicollinearity with the OVL variable and yielded coefficients of unreasonable magnitudes. The one functional form that did seem to work was a linear one involving the product of OVL and system subscribers. The coefficient estimates using this form imply that rates for competitive franchises of larger

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[63]Besen and Woodbury (June 17, 1993, pp. 21-26); Economists Incorporated, "The Effect of 'Competition' on Rates Differs for Large and Small Cable Systems." NERA (June 16, 1993, pp. 2-3) argues that systems with over 10,000 subscribers behave differently from those with under 10,000 subscribers, and that these 2 groups have different competitive differentials.

systems rise to the level of non-competitive ones.[64] But when extrapolated beyond the range of observed values for this interaction variable, the equation predicts implausibly high values for the dependent variable.[65] In addition, in our sample of municipals and overbuilds, there is a high correlation between system subscribers and length of competition.[66] We noted above that the competitive differential for overbuilds declines as the duration of competition increases, possibly because cable operators learn over time to engage in parallel pricing strategies. This leads us to conclude that if there is an interaction between competition and system size, it may take the form of franchises of large systems engaging in less vigorous price competition, and thus charging prices approximating those of the non-competitive sample.

As a further attempt to isolate a possible interaction between competition and system size, we tried adding a variable which is equal to RSS for franchises that were included in the B and C samples and zero for those that were not. Unlike the system size interactions described above, this variable had a coefficient that did not have a very severe multicollearity problem. This coefficient, which can be treated as an estimate of the effect of system size on the competitive differential, was not significantly different from zero, further casting doubt on the interaction between competition and system size.

Possible Simultaneous Equations Bias

Whenever a supply or demand equation is estimated independently of the other, there is often a concern that what is being estimated is really a combination of both supply and demand factors. This is known as simultaneous equations bias. There are 2 ways this possible problem can be eliminated from the regression estimates. The easier, and the one used here, is to replace households subscribing (quantity demanded) in the equation with households passed (quantity supplied). The other would be to use a simultaneous equations estimation technique such as two-stage least squares. This technique allows for the interaction between supply and demand by introducing some extra

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[64]This is the result of the coefficient of this interaction variable being positive. The best fitting model which includes this interaction variable indicates that the competitive effect disappears at about 43,000 system subscribers.

[65]For a fully competitive system that would have the same characteristics as the largest noncompetitive system in our sample, the model predicts a rate of over $200 per subscriber per month.

[66]This correlation is .55, indicating that larger systems have been competing for more years.

variables that only affect demand. This would normally be a slightly preferable approach because the effect of the number of households on rates probably results primarily from the spreading of fixed costs, which is determined by the number of households actually subscribing, not the number of households passed. However, because of the way in which the number of subscribers enters the equation as a reciprocal, this approach yields an intractable functional form. Because the number of households passed is highly correlated with the number of subscribers, replacing RSS with RHP, the reciprocal of households passed in the system, will result in an estimate that is close to what could be achieved using a two-stage least squares approach.

Table A-2 shows the estimates that result from this approach. A comparison of the regression results using this approach with the ordinary least squares results of Table A-1 shows that, except for the coefficient of system size, the results are very similar. This indicates that there is no significant simultaneous equations bias in our original estimates.

Use of the Benchmark Equation in the Going-Forward Methodology

Our going-forward methodology permits cable operators to recover external costs, to adjust non-external costs for inflation, and to adjust non-external costs by a specified amount per channel when the total number of regulated channels changes. Non-external costs are also adjusted on a tier basis when cable operators restructure tiers. This subsection explains how these adjustments were calculated, based on our benchmark equation.

When a cable operator increases the number of regulated channels offered, it may recover additional non-external costs. When a cable operator decreases the number of regulated channels offered, the amount of non-external costs that it may recover decreases. When a cable operator moves channels from one tier to another, the amount of non-external costs that it may recover per tier changes. In order to calculate these changes in permitted non-external costs, cable operators must utilize the table below. The entries in the table, which are based on our benchmark equation, indicate the amounts, in cents per channel per subscriber per month, by which cable operators will adjust their non-external costs.

When the total number of regulated channels changes, the cable operator will calculate the average of the old and new total numbers of regulated channels and consult this table to find the applicable per channel adjustment factor. The total permitted adjustment is the product of the per channel adjustment factor and the change in total regulated channels. It is positive if the number of regulated channels has increased and negative if the total number of regulated channels has decreased.

The change in allowed non-external costs per tier is equal to the change in the number of channels on the tier (positive for increases and negative for decreases) multiplied by the per channel adjustment factor.

If the operator is merely restructuring tiers and there is no change in the total number of regulated channels, then the operator would find its total number of regulated channels in the table and note the corresponding per channel adjustment factor. Then, for tiers losing channels, the allowed non-external costs would decline by the adjustment factor multiplied by the number of channels removed from the tier. For tiers gaining channels, the allowed non-external costs would increase by the adjustment factor multiplied by the number of channels added to the tier.

We have based the non-external cost recovery formula on our benchmark rate equation. The benchmark equation shows how average revenue per subscriber changes as the number of regulated channels offered changes. A change in the number of regulated channels will clearly affect non-external costs and may affect programming costs as well. The total number of regulated channels appears in two variables of the equation. One is the reciprocal of total regulated channels, which has a negative coefficient. The other is the ratio of nonbroadcast channels on regulated tiers to total regulated channels, which has a positive coefficient.

Intuition suggests that the non-external costs of adding a channel are the same for broadcast and nonbroadcast channels. However, adding a nonbroadcast channel probably adds more to programming cost than does adding a broadcast channel. (Must carry stations, for example, have no programming cost associated with them.) This leads us to conclude that the ratio of nonbroadcast channels variable primarily reflects changes in programming costs and the total channels variable primarily reflects changes in non-external costs. Suppose, however, that a cable system added a single broadcast channel with no associated change in programming costs. The value of the ratio of nonbroadcast channels variable would fall, reducing its contribution to average revenue per subscriber, even though programming costs did not change. The value of the reciprocal of total channels variable would also fall. Given the negative sign on its coefficient, this increases its contribution to average revenue per subscriber. That increase must include not only increased non-external costs but some component to counterbalance the change in the ratio of nonbroadcast channels variable.

These considerations lead us to vary only the value of the reciprocal of total channels variable when we calculate the impact of channel changes, setting the variables in the equation other than the reciprocal of average total channels variable equal to their means for our noncompetitive sample of cable

systems. Because the reciprocal of total channels variable likely includes some of the programming cost effect when nonbroadcast channels are added, we considered "backing out" a programming cost component from the permitted cost increases generated by our benchmark formula. However, it is impossible to determine how much of programming costs might be captured by this variable. Moreover, we have no good data on programming costs as a share of total costs.[67] These considerations, plus our desire to avoid errors that might generate excessively low per channel adjustment factors, led us to refrain from reducing the channel adjustment factors generated by the benchmark equation in order to remove a programming cost component from them.

To calculate the per channel adjustment factors in the table, we substituted mean values from our non-competitive sample into the benchmark equation for all variables other than the reciprocal of total regulated channels. Because the competitive dummy variables take on the value of zero in the noncompetitive sample, this means that we did not reduce the predicted average revenue per subscriber by our 17 percent competitive differential. The distinction is important because our procedure generates percentage changes in average revenue per subscriber as total regulated channels change. The magnitude of the change depends on the base value of revenue per subscriber. This magnitude is higher than it would be if we had chosen to deduct the competitive differential first. Our procedure here guards against excessively low channel adjustment factors and may be rationalized by noting that our benchmark equation generates changes in revenue per subscriber that were sufficient to make noncompetitive cable systems willing to increase the number of channels offered.

Using the relation between average revenue per subscriber and average total channels described in the previous paragraph, we calculated the change in average revenue per subscriber for a large number of one and two channel increments and associated those changes with the midpoint of the increment. For example, the change from 10 to 11 channels is associated with 10.5 channels. The change from 10 to 12 channels (divided by two) is associated with 11 channels, etc. The cable systems in our noncompetitive sample had channel capacities ranging from seven to 70. We therefore performed this exercise over a range (six to 71 channels) large enough to generate adjustment factors for seven to 70 channels. The portions of that range with identical

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[67] A submission from Continental Cable suggests that programming costs (pay plus basic) are 15.7% of total costs. An investment research report from Goldman Sachs estimates, for a hypothetical cable system, that basic programming costs would be 18.3% of basic revenues.

cost changes are grouped together in the table.[68]

The calculated cost changes are largest for small numbers of channels, reflecting the fact that our benchmark curve drops steeply at those channel levels and then flattens out substantially at higher channel levels. Low channel capacity systems are likely to have different, perhaps significantly different, characteristics than the average for the entire sample. Using sample averages could inflate the adjustment factors for those channel levels. Therefore, we made a separate calculation for the seven to 20 channels region, setting the variables in the equation other than the reciprocal of average total channels equal to their means for the subsample of noncompetitive systems with 20 or fewer channels. The figures in the table for seven to 20 channels are calculated in this fashion. For the range from 21.5 to 70 channels, the figures in the table are calculated using mean values for the entire noncompetitive sample as described above.

We note that the number of subscribers to systems in the seven to 20 channels range is relatively small and that most of these systems are likely to be small systems, for which we plan to do more detailed cost studies. Hence, it is likely that we will have more detailed information on costs of systems in this channel range before many of those systems would have occasion to use this per channel adjustment table.

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[68] Our dependent variable is average revenue per subscriber, averaged over the various service tiers that the system offers. Hence, our procedure yields changes in allowed network costs per subscriber, assuming that all subscribers are assessed the additional costs. This is an appropriate assumption when the channel change is in the basic tier, since all subscribers get basic service. However, all subscribers do not subscribe to other tiers. Our survey shows that 89% subscribe to tier 2 and 85% to tier 3. To allow the cable operator to recover all the network costs to which it is entitled, it would be necessary to inflate the per channel adjustment factor by the reciprocal of the relevant tier's penetration of basic subscribers. Pending receipt of further information on how subscribership varies by tier, we have decided not to differentiate among tiers in application of the per channel adjustment factors.

Table A-1

Regression Results

Variable	Coefficient
Low Penetration Dummy (A1)	-.010 (.016)
Overbuild Overlap (OVL)	-.174 (.033)
Municipal Dummy (C)	-.231 (.050)
MSO Dummy (MSO)	.070 (.030)
Log of MSO Size (LMS)	.0097 (.0042)
Reciprocal of System Subscribers (RSS)	8.14 (1.60)
Reciprocal of Average Total Channels (RTC)	-1.45 (.61)
Proportion of Non-Broadcast Channels (PNB)	.253 (.079)
Proportion of Additional Outlets (PAO)	.103 (.026)
Proportion of Remotes (PRM)	.172 (.031)
Proportion of Tier 2 Subscribers (PT2)	.057 (.019)
Proportion of Tier Changes (PTC)	.353 (.111)
Log of Median Income (LIN)	.069 (.021)
Intercept	2.04 (.23)
R Square	.469
A1 impact	-.010
OVL impact	-.160
C impact	-.206
OVL + C impact	-.366
MSO impact	.073
PNB impact	.288
PAO impact	.109
PRM impact	.187
PT2 impact	.058
PTC impact	.424

Note: Numbers in parentheses are standard errors.

Table A-2

Estimates Eliminating Possible Simultaneous Equations Bias

Variable	Coefficient
Low Penetration Dummy (A1)	.009 (.016)
Overbuild Overlap (OVL)	-.174 (.033)
Municipal Dummy (C)	-.217 (.050)
MSO Dummy (MSO)	.075 (.030)
Log of MSO Size (LMS)	.0108 (.0042)
Reciprocal of System Households Passed (RHP)	21.42 (5.19)
Reciprocal of Average Total Channels (RTC)	-1.53 (.65)
Proportion of Non-Broadcast Channels (PNB)	.243 (.079)
Proportion of Additional Outlets (PAO)	.109 (.027)
Proportion of Remotes (PRM)	.171 (.032)
Proportion of Tier 2 Subscribers (PT2)	.054 (.019)
Proportion of Tier Changes (PTC)	.362 (.112)
Log of Median Income (LIN)	.070 (.021)
Intercept	2.03 (.23)
R Square	.458
A1 impact	.009
OVL impact	-.159
C impact	-.195
OVL + C impact	-.354
MSO impact	.078
PNB impact	.275
PAO impact	.115
PRM impact	.186
PT2 impact	.056
PTC impact	.436

Note: Numbers in parentheses are standard errors.

Table A-3

Adjustment Factors for Calculating Changes in Allowed Network Costs

Average Number of Channels	Per-Channel Adjustment Factor	Average Number of Channels	Per-Channel Adjustment Factor
7	$0.52	14	0.14
7.5	0.45	14.5	0.13
8	0.40	15-15.5	0.12
8.5	0.36	16	0.11
9	0.33	16.5-17	0.10
9.5	0.29	17.5-18	0.09
10	0.27	18.5-19	0.08
10.5	0.24	19.5-21.5	0.07
11	0.22	22-23.5	0.06
11.5	0.20	24-26	0.05
12	0.19	26.5-29.5	0.04
12.5	0.17	30-35.5	0.03
13	0.16	36-46	0.02
13.5	0.15	46.5 and up	0.01

February 22, 1994

SEPARATE STATEMENT

OF

COMMISSIONER ANDREW C. BARRETT

RE: Implementation of the Cable Television Consumer Protection and Competition Act of 1992 -- Rate Regulation (Fourth Order on Reconsideration, Fourth Report and Order)

With today's actions, the Commission revises its cable rate regulations by modifying the benchmark methodology, which serves as the primary approach for regulating cable service rates. In a separate rulemaking, the Commission establishes requirements to govern cost-of-service showings to justify rates above the levels determined by the benchmark approach.

The Commission's decision affirms a benchmark methodology and establishes a new competitive differential at 17% relative to September 1992 rate levels to guide rate reductions. Accordingly, the revised rules will require systems to reduce rates by 17% from their September 1992 level, or to the new benchmark, whichever is less. Once systems make their necessary reductions to comply with the new benchmark mechanism, they are permitted to add external costs and to apply a "going forward" adjustments for additional channels or system upgrades. Systems that have reduced rates by 17% (i.e., a prior 10% adjustment under the old benchmark and an additional 7% under the new benchmark), also may make adjustments for inflation.

In addition, these revised rules will initiate cost studies to verify cost differences among cable operators in comparison to the competitive differential. Systems that are required to reduce their rate by an amount less than the full 17% competitive differential -- as well as systems with rates below the new benchmark level that are not required to make any immediate reductions -- will be required to engage in future rate actions in accord with the results of the cost studies. As further elements of the cable rate regulation package, the Commission establishes (1) a mechanism to allow "going forward" adjustments for additional channels and system upgrades, and (2) a standard for targeted rate relief, as well as provisions for administrative relief, to small operators.

During this proceeding, I have consistently stated that the Commission must implement rate regulations in an orderly and effective manner in order to maintain the integrity of our regulatory process, to avoid creating potential unintended consequences, and to minimize false expectations among the consumer public.[1] I have also stated that the Commission's rate

[1] See Order in MM Docket No. 92-266, FCC 93-372, released July 27, 1993, 58 FR 41042 (Concurring in Part and Dissenting in Part Statement of Commissioner Andrew C. Barrett). See also First Order on Reconsideration in MM Docket No. 92-266, FCC 93-248, released August 27, 1993, 58 FR 46718 (Separate

regulation mechanisms must (1) incorporate measures of flexibility in order to balance the concerns of the industry, consumers, and franchising authorities, and (2) minimize the uncertainty that has resulted from the cable rate regulation proceeding so that consumers and the industry may develop realistic expectations and business plans, respectively.[2]

I write separately today in order to emphasize that my decision to support this rate regulation package is based on the measure of flexibility built into a benchmark system of regulation, including several of the "going forward" and "cost-of-service" components. Given the lack of complete information on pricing and costs, and our relatively limited sample for competitive and noncompetitive pricing behavior, I believe that a revised benchmark approach exercises the necessary caution in recognizing the variety of cost structures and pricing practices throughout the cable industry. During the reconsideration process, the Commission has revised the benchmarks by correcting the data on competitive and noncompetitive systems as well as refining the statistical procedure for estimating the benchmarks. Therefore, I believe that the benchmark information, although arguably subject to certain shortcomings detailed in this proceeding's record, now forms a better foundation for other components of the rate regulation package, especially the "going forward" allowances for channel additions and upgrades.

Next, I believe that the other components in this rate regulation package -- including the "going forward" methodology, the presumptions established to guide decisions regarding "a la carte" practices, and the provisions for a measure of small system relief -- will provide necessary flexibility to allow operators to begin to develop future business plans and to add new programming services. With respect to the "going forward" mechanism, I believe that the allowance for actual programming costs may help to avoid unintended consequences for program services as a result of the revised rate regulations. The opportunity for a streamlined cost-of-service showing also will allow operators to account for new services through upgrades of their systems. In addition, I support today's effort to distinguish legitimate "a la carte" marketing practices for programming services from those practices that could constitute evasions of the Commission's rate regulations. In this regard, I believe that the presumptions regarding "a la carte" practices will enable the Commission to identify legitimate package offerings that increase realistic consumer choices and provide for a reasonable number of programming services at favorable rates. Finally, the Commission has provided for a measure of rate relief for small operators, which will allow certain small operators to make external cost and "going forward"

Statement of Commissioner Andrew C. Barrett); Testimony of Commissioner Andrew C. Barrett, Federal Communications Commission, Before the U.S. House of Representatives, Subcommittee on Telecommunications and Finance, (September 28, 1993).

[2] See Keynote Address by Commissioner Andrew C. Barrett, Federal Communications Commission, Prentice Hall Law & Business Cable Conference; June 28, 1993. See also Order in MM Docket No. 92-266, FCC 93-372, released July 27, 1993, 58 FR 41042 (Concurring in Part and Dissenting in Part Statement of Commissioner Andrew C. Barrett); Testimony of Commissioner Andrew C. Barrett, Federal Communications Commission, Before the U.S. House of Representatives, Subcommittee on Telecommunications and Finance, (September 28, 1993); Order, MM Docket No. 92-266, released February 8, 1994 (Separate Statement of Commissioner Andrew C. Barrett).

adjustments to rates regardless of where the rates of these systems fall relative to the benchmark. Nonetheless, I remain concerned that some small operators may find that further relief is necessary in order to avoid particular hardship, and I emphasize that the provision for additional hardship relief to certain small operators, as well as the streamlined cost-of-service mechanism, will become important recourse for small operators in such dire situations.[3]

The revised rules also will initiate a cost study to verify cost differences among cable operators in comparison to the competitive differential. I believe that this study will provide important information to guide the Commission's analysis of the differences among competitive and noncompetitive operators, as well as the operating distinctions that may exist among small, medium and large operators. I also believe that this detailed cost information will enable the Commission to evaluate the validity of many policy assumptions that have guided our efforts in this proceeding, and therefore, will help to identify whether further adjustments are necessary to these refined rate regulations. As a result, I believe that it is appropriate to postpone rate actions as applied to certain systems, especially to small systems and those systems with rates below the new benchmark level, and to base future rate actions for those systems upon the differential, if any, identified by results of the cost study. I especially am interested in the cable industry's full participation in this cost study in order to resolve a notable void in this proceeding's record. As a consequence, I believe that these studies must be completed as soon as possible before the end of 1994 in order to promote the certainty that will enable all operators to develop future business plans.

Based upon my own analysis, I believe that the new competitive differential of 17% as compared to the September 1992 rate levels represents the highest point of what I consider to be an acceptable range for this policy determination. I have previously asked questions regarding the proper procedure for calculating the differential between competitive and noncompetitive rates, especially concerning the effect of the statistical treatment for low penetration and municipal systems on the differential.[4] I am aware that the Commission's revised data and statistical procedures provide analytical support for a 17% differential by focusing primarily on the differences between noncompetitive systems and overbuild systems, while retaining a measured consideration of the low penetration and municipal systems in the competitive sample. Nonetheless, I remain concerned that a more cautious approach for developing a competitive differential would reflect the limited confidence that results from a relatively small sample size and a lack of cost data. Furthermore, I consistently have emphasized the need to consider the effect of the cable rate regulations on industry investment.[5] The freeze on cable revenues and the implementation of the benchmark mechanism have had a negative impact on the cable industry's

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[3] The dire financial straits faced by many small operators are well documented in this proceeding, including a letter submitted by the U.S. Small Business Administration, January 27, 1994.

[4] See Rate Order and Further Notice of Proposed Rulemaking in MM Docket No. 92-266, FCC 93-177, released May 3, 1993, 58 Fed Reg 29736 (Separate Statement of Commissioner Andrew C. Barrett).

[5] See n. 2.

revenues and kept rates from rising. For example, a recent study states that these actions "have already precipitated more than an estimated $2 billion direct loss of revenues and cash flow," while also citing "the complete foreclosure of growth avenues for cable TV programmers."[6] Therefore, I am concerned about the potential effects of the 17% competitive differential relative to the September 1992 rate level. However, I also believe that the entire cable rate regulation package, including our cost-of-service and "going forward" options, incorporates important elements of flexibility that will allow operators to adjust to the 17% differential, where necessary. For example, all systems are permitted to adjust rates for external costs and "going forward" factors. Systems above the benchmark, which are required to reduce their rates by the full competitive differential, are permitted to make adjustments for inflation as accrued between September 1992 and September 1993.

Additionally, I believe that the benefits of the"going forward" mechanism for many operators will occur through the streamlined cost-of-service process, which will be subject to further comments and refinements. Given that this process will affect the incentives for operators to invest toward future system developments and the carriage of new programming services, I am concerned that this streamlined cost showing serve as an important bridge between the benchmark mechanism and the requirements for a full cost-of service showing. The streamlined cost-of-service process will play a critical role within the rate regulation framework, especially through provisions for an incentive-based plan for upgrades and the opportunities to demonstrate separate allocations for improvements to existing regulated services.

With respect to the cost-of-service proceeding, I support various aspects of the Order that grant flexibility to operators with unique cost-based circumstances that justify rates above the new permitted benchmark level. Furthermore, the cost-of-service process includes a rate-of-return factor of 11.25% that is reasonable as compared to other regulated industries, especially after tax considerations are included. I believe that necessary flexibility in the cost-of-service process also occurs through the cost allocation mechanism, the procedure for determining the portion of excess acquisition costs that operators may recover, as well as the provisions for treatment of Subchapter S corporations. As a result, I believe that the range of factors considered in the cost-of-service process, including the option for hardship showing, will begin to mitigate some of the consequences for cable operators who may endure the most significant changes as a result of the new 17% competitive differential.

Finally, I believe that this decision must be viewed in light of the overall package of elements that affect the rate calculations as well as the rate adjustments and cost showings that will be allowed. Therefore, I encourage the industry to await the release of all final orders before assessing the effects of these decisions on their particular markets. In the end, my goal is

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[6] See Study by Paul Kagan Associates, January 1994. The record in this proceeding underscores the difficulties created by cable rate regulation for many programmers, including certain programmers that have manifested subscriber increases, in part, by initially offering services at no cost. See Correspondence filed tin MM Docket No. 92-266 by Discovery Communications, February 1, 1994; E! Entertainment Television, February 14, 1994; and United Video, February 14, 1994.

to ensure that our decisions in this area are balanced and will permit continued investment to enhance services to the public. These rulemakings on cable rate regulation have involved extremely complex analysis, and I acknowledge the outstanding dedication shown by our Commission staff, my colleagues, and their respective staffs.